

# **CAPITALIZATION RATE STUDY FOR NATURAL RESOURCE PROPERTIES**

**FOR: JANUARY 1, 2021**



## **UTAH STATE TAX COMMISSION**

**PROPERTY TAX DIVISION  
UTILITIES & TRANSPORTATION SECTION  
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**UTAH STATE TAX COMMISSION**  
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**SUMMARY OF WACC CALCULATIONS CONTINUED**

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Industry	Nominal Rate	Real Rate	Tax-Adjusted	
			Nominal Rate	Real Rate
COAL MINING	8.59%	6.79%	9.56%	7.74%
PRECIOUS METALS	6.24%	4.48%	8.05%	6.26%
NON-PRECIOUS METALS	9.29%	7.47%	12.22%	10.36%
NON-METALS	8.73%	6.92%	11.38%	9.53%
OIL & GAS PRODUCTION/WD	9.82%	7.99%	11.72%	9.87%
OIL & GAS GATHERING	8.25%	6.45%	9.67%	7.85%
SAND AND GRAVEL	9.58%	7.76%	12.31%	10.45%
URANIUM MINING	7.17%	5.39%	9.45%	7.63%

\*Nominal Rate (NR) includes both the real rate and the impact of inflation (IR)

$$\text{Real Rate} = [(1+NR)/(1+IR)]-1$$

$$\text{Coal Example} = [(1+0)/(1+0.0169)]-1 = 0.0679$$



**UTAH STATE TAX COMMISSION**  
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The Property Tax Division of the Utah State Tax Commission ("Division") estimates the market cost of equity for the industries it is required to assess for property tax purposes according to Utah Law. The Division estimates the market cost of equity using recognized equity models based on financial literature, research, and guidance from Utah Tax Commission Administrative Rule R884-24P-62 ("Rule 62"). The equity models used by the Division include various Capital Asset Pricing Models ("CAPM"), various Dividend Growth Models ("DGM"), and a Risk Premium Model. The following is a summary of each of these models.

## **CAPM**

The Division uses three CAPM cost of equity models: CAPM: Rule 62, CAPM: Supply Side, and CAPM: Implied Equity Risk Premium. Each of these CAPMs are based on the formula:

$$K(e) = R(f) + (\text{Beta} \times \text{Equity Risk Premium})$$

Where:

$K(e)$  = the estimated market cost of equity

$R(f)$  = the current risk free rate

Beta = a measure of the volatility of an individual stock compared to the volatility of the market as a whole.

Equity Risk Premium = the premium investors require above the return on a risk free investment. In other words, the additional return investors require for investing in risky securities vs. risk free securities. The Equity Risk Premium is also commonly referred to as the Market Risk Premium.

The difference between the three CAPMs that the Division calculates is how the Equity Risk Premium is estimated.

### **CAPM: RULE 62**

Utah Tax Commission Administrative Code R884-24P-62 ("Rule 62") states that the CAPM is the "preferred method for estimating the cost of equity" (Utah Tax Code R884-24P-62 (5)(b)(i)(B)(II)(Aa)). Rule 62 also states that "more than one method may be used to correlate a cost of equity, but only if the CAPM method is weighted at least 50% in the correlation" (Utah Tax Code R884-24P-64

Rule 62 requires the Division to use or estimate the inputs for this CAPM as follows:

- The risk free rate shall be the current market rate on 20-year Treasury bonds.
- The beta should reflect an average or value-weighted average of comparable companies and should be drawn from Value Line or an equivalent source.
- The Risk Premium shall be the arithmetic average of the spread between the return on stocks and the income return on long-term bonds for the entire historical period contained in the Ibbotson Yearbook published immediately following the lien date.<sup>1</sup>

<sup>1</sup> This information is now provided by Duff and Phelps



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**CAPM: Supply Side**

The CAPM: Supply Side uses the same inputs as the CAPM: Rule 62 except that the Supply Side uses an Equity Risk Premium that is based on the historical returns of companies in the form of earnings, dividends, and capital gains. Ibbotson states that "investors should not expect a much higher or lower return than that produced by the companies in the real economy."<sup>2</sup> This earnings model separates the Equity Risk Premium into four sections: inflation, income growth, growth in real earnings, and growth of the Price Earnings Ratio ("P/E Ratio"). In other words, CAPM: Supply Side ignores the historical returns that have resulted in the change in the P/E ratio. The Division uses the Supply Side Equity Risk Premium published by Duff and Phelps.

**CAPM: Implied Equity Risk Premium**

Professor Damodaran from the Stern School of Business at New York University estimates the Equity Risk Premium by using current market data to extract the premium currently required by investors. Dr. Damodaran relies on the price of the S&P 500 index and the expected future cash flows of the index (including dividends and share repurchases) to estimate the current implied expected return on the market.<sup>3</sup> This expected return is then compared to the current return on the risk free rate to derive an implied equity risk premium. The Division adjusts Dr. Damodaran's model, which is compared to a 10-year Treasury bond, to compare it to the 20-year Treasury bond that the Division uses in its other CAPM models.

<sup>2</sup>Ibbotson SBBI 2015 Classic Yearbook pg. 155

<sup>3</sup><http://pages.stern.nyu.edu/~adamodar/>



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## DGM

The Division uses three multi-stage DGM cost of equity models: the Division's 3-Stage DGM, the 3-Stage IRR, and the Cornell 3-Stage DGM. All of these models start with a short-term growth rate that is then adjusted, over a period of years, to a more sustainable long-term growth rate. The basic formula for a DGM is:

$$K(e) = (D1/P0) + g$$

Where:

$K(e)$  = the estimated cost of equity

$D1$  = next years expected dividend (including stock buybacks)

$P0$  = current stock price

$g$  = the expected growth in dividends (including stock buybacks)

### Division's 3-Stage DGM

The Division uses a 3-stage dividend growth model as a way to calculate the cost of equity. Value Line provides a 3-5 year earnings growth estimate that the Division uses as the growth rate for the first 5 years. This growth rate converges to the long-term growth rate over the next 5 years. The long-term growth rate is an estimate provided by the Congressional Budget Office. The long-term growth rate is used for the next 20 years in the final stage. The growth rates in the early years are weighted more than the later years. This weighted average growth rate estimate is then added to a payout yield. The payout yield is next year's expected dividends and buybacks divided by the current stock price. The result is the estimated cost of equity.

### H-Model

The H-Model is often considered a hybrid between a 2 and 3 stage DGM. Like a 3 stage DGM, the H-model provides a transition period between short and long term growth but does so over only two stages. The first stage is a transition period where the dividend growth rate linearly converges from the 3-5 year growth rate provided by Value Line to the long term growth rate. This convergence takes place over a specified period,  $2H$ , or twice the half-life of the transition. A transition period of 15 years is used resulting in an  $H$  of 7.5. After the transition period, the H-Model grows the dividend at a long term growth rate.

### Cornell 3-Stage DGM

This 3-stage DGM follows the model put forth in "The Equity Risk Premium" by Bradford Cornell. This model uses the 5 year growth estimate provided by Value Line, then that growth rate converges linearly to the long-term growth rate over a 15 year period. In year 20, a terminal value is calculated iteratively using the  $V = (CF_{n+1}) / (k-g)$  formula. An internal rate of return calculation is then applied to the estimate of cash flows available to equity holders (including the terminal value) to determine the implied cost of equity that will equal the current stock price.



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**KEY RATES AND FIGURES**

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**CORPORATE BONDS**

Aaa	2.26%
Aa	2.44%
A	2.72%
Baa	3.16%
Ba1	5.46%
Ba2	6.13%
Ba3	6.80%
B1	7.47%
B2	8.14%
B3	8.81%
Caa1	9.48%
Caa2	10.15%
Caa3	10.82%
Ca	11.49%
C	12.16%

**PUBLIC UTILITY BONDS**

Aaa	N/A
Aa	2.57%
A	2.77%
Baa	3.05%

**PREFERRED STOCKS**

Aaa	N/A
Aa	N/A
A	N/A
Baa	N/A

**MISCELLANEOUS RATES**

Airline 'TEFRA' Relief Factor	6.76%
4-R Act Relief for Railroads	14.28%
4-R Act Relief (BNSF only)	6.76%
Rural Telephone Equity Rate Adj.	4.00%
Marginal Income Tax Rate	25.00%
GDP Price Deflator Forecast	2.20%
Long Term Growth Rate	3.80%

**INFLATION FACTORS**

	4th Qtr.	Annual	
	GDP Implicit	Percent	Conversion
Year	Price Deflator	Change	Factor
2010	96.78	1.59%	1.182
2011	98.68	1.96%	1.160
2012	100.73	2.08%	1.136
2013	102.55	1.81%	1.116
2014	104.08	1.49%	1.099
2015	104.94	0.82%	1.090
2016	106.51	1.50%	1.074
2017	108.64	2.00%	1.053
2018	111.16	2.32%	1.029
2019	112.99	1.65%	1.013
2020	114.42	1.26%	1.000

2021 - 2011 Average Change: 1.69%

**Source:**

U.S. Department of Commerce: Bureau of Economic Analysis  
Gross Domestic Product: Implicit Price Deflator

**MARKET RISK PREMIUMS**

Full Term Historical Risk Premium	7.25%
Supply Side Risk Premium	6.00%
Damodaran Implied ERP	4.50%
Risk Free Rate	1.45%

**MISCELLANEOUS INFORMATION**

Stock prices are from the last trading day of 2020. Retrieved from <http://finance.yahoo.com/>

Bond yield information derived from the January 2021 Mergent bond record.

Company and industry data was taken from the last Value Line tear sheet of 2020.

Damodaran Implied Risk Premium Model Calculated Based on Model Found at: <http://pages.stern.nyu.edu/~adamodar/>

Full term historical and supply side RP are taken from: Duff and Phelps.



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COAL MINING -- EQUITY RATE SUMMARY

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**RECONCILIATION**

Equity Models	Weight	Equity Rate
CAPM: RULE 62 . . . . .	100%	9.64%
CAPM: SUPPLY SIDE . . . . .	0%	8.23%
CAPM: IMPLIED ERP . . . . .	0%	6.54%
DGM: DIVISION . . . . .	0%	NMF
DGM: CORNELL . . . . .	0%	NMF
DGM: H-MODEL . . . . .	0%	NMF
Reconciled Equity Rate		9.64%
Reconciled Debt Rate		8.14%
Debt/Equity Structure		70% / 30%
WACC Conclusion		8.59%





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**CALCULATION OF CAPITAL STRUCTURE**

Company	Market Value Of Equity*	Market Value Of Debt*	Percent Equity	Percent Debt
Alliance Resource (ARLP)	578.79	606.45	49%	51%
CONSOL Energy (CEIX)	245.37	665.29	27%	73%
Hallador Energy Co (HNRG)	44.79	150.20	23%	77%
Peabody Energy (BTU)	235.70	1,029.70	19%	81%
Suncoke Energy Inc (SXC)	427.07	720.10	37%	63%
Selected Equity and Debt Structure			30%	70%

**GUIDELINE COMPANY INFORMATION SUMMARY**

Company	Beta	Credit Rating	Debt Rate
Alliance Resource (ARLP)	1.25	Ba3	6.80%
CONSOL Energy (CEIX)	N/A	B2	8.14%
Hallador Energy Co (HNRG)	1.05	N/A	N/A
Peabody Energy (BTU)	0.95	Caa1	9.48%
Suncoke Energy Inc (SXC)	1.25	B1	7.47%
Selected for Industry	1.13	B2	8.14%

\* Amounts in Millions



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**CAPM: RULE 62 COMPLIANT**

Market Risk Premium	7.25%
X Industry Beta	1.13
Industry Risk Premium	8.19%
Add: Risk Free Rate	1.45%
<b>Indicated Rate</b>	<b>9.64%</b>

**CAPM: IMPLIED ERP**

Market Risk Premium	4.50%
X Industry Beta	1.13
Industry Risk Premium	5.09%
Add: Risk Free Rate	1.45%
<b>Indicated Rate</b>	<b>6.54%</b>

**CAPM: SUPPLY SIDE**

Market Risk Premium	6.00%
X Industry Beta	1.13
Industry Risk Premium	6.78%
Add: Risk Free Rate	1.45%
<b>Indicated Rate</b>	<b>8.23%</b>

**MULTISTAGE DIVIDEND GROWTH MODEL**

**Indicated Rates**

Company Name	Division's	Dr. Cornell's	H-Model
Alliance Resource (ARLP)	N/A	N/A	N/A
CONSOL Energy (CEIX)	N/A	N/A	N/A
Hallador Energy Co (HNRG)	N/A	N/A	N/A
Peabody Energy (BTU)	N/A	N/A	N/A
Suncoke Energy Inc (SXC)	N/A	N/A	N/A

**Selected Rate**

**NMF**

**NMF**

**NMF**



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**DIVIDEND GROWTH MODEL INPUTS**

Company Name	Stock Price	Next Year's Payout	Current Payout	Projected Growth	Long Term Growth Rate
Alliance Resource (ARLP)	4.48	N/A	0.00	-9.00%	3.80%
CONSOL Energy (CEIX)	7.21	N/A	0.00	N/A	3.80%
Hallador Energy Co (HNRG)	1.47	N/A	0.00	N/A	3.80%
Peabody Energy (BTU)	2.41	N/A	0.00	N/A	3.80%
Suncoke Energy Inc (SXC)	4.35	0.44	0.44	-27.50%	3.80%

**UTAH STATE TAX COMMISSION****PROPERTY TAX DIVISION****PRECIOUS METALS -- EQUITY RATE SUMMARY**

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**RECONCILIATION**

Equity Models	Weight	Equity Rate
CAPM: RULE 62 . . . . .	100%	6.38%
CAPM: SUPPLY SIDE . . . . .	0%	5.53%
CAPM: IMPLIED ERP . . . . .	0%	4.51%
DGM: DIVISION . . . . .	0%	16.45%
DGM: CORNELL . . . . .	0%	16.42%
DGM: H-MODEL . . . . .	0%	11.07%
Reconciled Equity Rate		6.38%
Reconciled Debt Rate		5.46%
Debt/Equity Structure		15% / 85%
WACC Conclusion		6.24%

**UTAH STATE TAX COMMISSION****PROPERTY TAX DIVISION****PRECIOUS METALS -- COMPANY INFORMATION**

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**CALCULATION OF CAPITAL STRUCTURE**

<b>Company</b>	<b>Market Value Of Equity*</b>	<b>Market Value Of Debt*</b>	<b>Percent Equity</b>	<b>Percent Debt</b>
AGNICO EAGLE MINES (AEM)	17,125.77	1,809.10	90%	10%
BARRICK GOLD CORP. (GOLD)	40,507.17	7,288.00	85%	15%
COEUR MINING INC. (CDE)	2,522.83	277.79	90%	10%
HECLA MINING CO. (HL)	3,489.40	568.48	86%	14%
KINROSS GOLD CORP. (KGC)	9,236.07	2,189.90	81%	19%
NEWMONT GOLDCORP (NEM)	47,912.00	7,698.00	86%	14%
PRETIUM RESOURCES (PVG)	2,140.02	265.12	89%	11%
<b>Selected Equity and Debt Structure</b>			<b>85%</b>	<b>15%</b>

**GUIDELINE COMPANY INFORMATION SUMMARY**

<b>Company</b>	<b>Beta</b>	<b>Credit Rating</b>	<b>Debt Rate</b>
AGNICO EAGLE MINES (AEM)	0.55	N/A	0.00%
BARRICK GOLD CORP. (GOLD)	0.55	Baa1	3.16%
COEUR MINING INC. (CDE)	0.85	B3	8.81%
HECLA MINING CO. (HL)	0.95	N/A	N/A
KINROSS GOLD CORP. (KGC)	0.60	Baa3	3.16%
NEWMONT GOLDCORP (NEM)	0.60	Baa1	3.16%
PRETIUM RESOURCES (PVG)	0.65	N/A	N/A
<b>Selected for Industry</b>	<b>0.68</b>	<b>Ba1</b>	<b>5.46%</b>

\* Amounts in Millions



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**CAPM: RULE 62 COMPLIANT**

Market Risk Premium	7.25%
X Industry Beta	0.68
Industry Risk Premium	4.93%
Add: Risk Free Rate	1.45%
<b>Indicated Rate</b>	<b>6.38%</b>

**CAPM: IMPLIED ERP**

Market Risk Premium	4.50%
X Industry Beta	0.68
Industry Risk Premium	3.06%
Add: Risk Free Rate	1.45%
<b>Indicated Rate</b>	<b>4.51%</b>

**CAPM: SUPPLY SIDE**

Market Risk Premium	6.00%
X Industry Beta	0.68
Industry Risk Premium	4.08%
Add: Risk Free Rate	1.45%
<b>Indicated Rate</b>	<b>5.53%</b>

**MULTISTAGE DIVIDEND GROWTH MODEL**

Company Name	Indicated Rates		
	Division's	Dr. Cornell's	H-Model
AGNICO EAGLE MINES (AEM)	18.40%	17.46%	9.40%
BARRICK GOLD CORP. (GOLD)	15.23%	16.84%	16.14%
COEUR MINING INC. (CDE)	N/A	N/A	N/A
HECLA MINING CO. (HL)	N/A	N/A	N/A
KINROSS GOLD CORP. (KGC)	17.56%	15.81%	7.54%
NEWMONT GOLDCORP (NEM)	14.59%	15.57%	11.21%
PRETIUM RESOURCES (PVG)	N/A	N/A	N/A
<b>Selected Rate</b>	<b>16.45%</b>	<b>16.42%</b>	<b>11.07%</b>



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**DIVIDEND GROWTH MODEL INPUTS**

Company Name	Stock Price	Next Year's Payout	Current Payout	Projected Growth	Long Term Growth Rate
AGNICO EAGLE MINES (AEM)	70.51	1.40	0.95	35.00%	3.80%
BARRICK GOLD CORP. (GOLD)	22.78	1.25	1.12	18.50%	3.80%
COEUR MINING INC. (CDE)	10.35	N/A	0.00	N/A	3.80%
HECLA MINING CO. (HL)	6.48	0.02	0.01	N/A	3.80%
KINROSS GOLD CORP. (KGC)	7.34	0.13	0.07	33.50%	3.80%
NEWMONT GOLDCORP (NEM)	59.89	2.66	1.70	19.50%	3.80%
PRETIUM RESOURCES (PVG)	11.48	N/A	0.00	29.50%	3.80%



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## NON-PRECIOUS METALS -- EQUITY RATE SUMMARY

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## RECONCILIATION

Equity Models	Weight	Equity Rate
CAPM: RULE 62 . . . . .	100%	10.37%
CAPM: SUPPLY SIDE . . . . .	0%	8.83%
CAPM: IMPLIED ERP . . . . .	0%	6.99%
DGM: DIVISION . . . . .	0%	12.73%
DGM: CORNELL . . . . .	0%	13.38%
DGM: H-MODEL . . . . .	0%	13.94%
Reconciled Equity Rate		10.37%
Reconciled Debt Rate		3.16%
Debt/Equity Structure		15% / 85%
WACC Conclusion		9.29%





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### NON-PRECIOUS METALS -- COMPANY INFORMATION

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#### CALCULATION OF CAPITAL STRUCTURE

Company	Market Value Of Equity*	Market Value Of Debt*	Percent Equity	Percent Debt
BHP BILLITON LTD. (BHP)	330,469.47	24,043.00	93%	7%
FREPORT-MCMORAN COPPER & GOLD (FCX)	37,937.16	10,239.00	79%	21%
MATERION CORP. (MTRN)	1,729.87	97.18	95%	5%
RIO TINTO PLC. (RIO)	121,698.44	15,507.00	89%	11%
SOUTHERN COPPER CORP. (SCCO)	57,605.15	9,986.20	85%	15%
TECK RESOURCES LTD. (TECKB.TO)	9,639.47	5,727.45	63%	37%
VALE S.A. (VALE)	85,971.84	13,360.00	87%	13%
Selected Equity and Debt Structure			85%	15%

#### GUIDELINE COMPANY INFORMATION SUMMARY

Company	Beta	Credit Rating	Debt Rate
BHP BILLITON LTD. (BHP)	1.10	A2	2.72%
FREPORT-MCMORAN COPPER & GOLD (FCX)	1.65	Ba1	5.46%
MATERION CORP. (MTRN)	1.15	N/A	N/A
RIO TINTO PLC. (RIO)	1.10	A2	2.72%
SOUTHERN COPPER CORP. (SCCO)	1.20	Baa2	3.16%
TECK RESOURCES LTD. (TECKB.TO)	1.10	Baa3	3.16%
VALE S.A. (VALE)	1.30	Baa3	3.16%
Selected for Industry	1.23	Baa2	3.16%

\*Amount in Millions



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**CAPM: RULE 62 COMPLIANT**

Market Risk Premium	7.25%
X Industry Beta	1.23
Industry Risk Premium	8.92%
Add: Risk Free Rate	1.45%
<b>Indicated Rate</b>	<b>10.37%</b>

**CAPM: IMPLIED ERP**

Market Risk Premium	4.50%
X Industry Beta	1.23
Industry Risk Premium	5.54%
Add: Risk Free Rate	1.45%
<b>Indicated Rate</b>	<b>6.99%</b>

**CAPM: SUPPLY SIDE**

Market Risk Premium	6.00%
X Industry Beta	1.23
Industry Risk Premium	7.38%
Add: Risk Free Rate	1.45%
<b>Indicated Rate</b>	<b>8.83%</b>

**MULTISTAGE DIVIDEND GROWTH MODEL**

Company Name	Indicated Rates		
	Division's	Dr. Cornell's	H-Model
BHP BILLITON LTD. (BHP)	12.60%	13.23%	14.16%
FREEPORT-MCMORAN COPPER & GOLI	16.28%	18.07%	18.31%
MATERION CORP. (MTRN)	7.28%	5.80%	5.59%
RIO TINTO PLC. (RIO)	13.39%	13.91%	14.89%
SOUTHERN COPPER CORP. (SCCO)	10.19%	9.59%	8.08%
TECK RESOURCES LTD. (TECKB.TO)	10.72%	10.87%	11.44%
VALE S.A. (VALE)	18.66%	22.20%	25.09%
<b>Selected Rate</b>	<b>12.73%</b>	<b>13.38%</b>	<b>13.94%</b>



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**DIVIDEND GROWTH MODEL INPUTS**

Company Name	Stock Price	Next Year's Payout	Current Payout	Projected Growth	Long Term Growth Rate
BHP BILLITON LTD. (BHP)	65.34	3.85	3.85	11.00%	3.80%
FREEPORT-MCMORAN COPPER & GOLD	26.02	1.23	1.28	23.00%	3.80%
MATERION CORP. (MTRN)	63.72	0.75	0.71	9.50%	3.80%
RIO TINTO PLC. (RIO)	75.22	6.24	6.14	7.00%	3.80%
SOUTHERN COPPER CORP. (SCCO)	65.12	2.00	1.50	12.00%	3.80%
TECK RESOURCES LTD. (TECKB.TO)	18.15	0.98	0.98	7.50%	3.80%
VALE S.A. (VALE)	16.76	1.39	1.34	20.00%	3.80%



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RECONCILIATION

Equity Models	Weight	Equity Rate
CAPM: RULE 62 . . . . .	100%	10.59%
CAPM: SUPPLY SIDE . . . . .	0%	9.01%
CAPM: IMPLIED ERP . . . . .	0%	7.12%
DGM: DIVISION . . . . .	0%	11.34%
DGM: CORNELL . . . . .	0%	11.68%
DGM: H-MODEL . . . . .	0%	12.79%
Reconciled Equity Rate		10.59%
Reconciled Debt Rate		3.16%
Debt/Equity Structure		25% / 75%
WACC Conclusion		8.73%



# UTAH STATE TAX COMMISSION

## PROPERTY TAX DIVISION

### NON-METALS -- COMPANY INFORMATION

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#### CALCULATION OF CAPITAL STRUCTURE

Company	Market Value Of Equity*	Market Value Of Debt*	Percent Equity	Percent Debt
Cenovus Energy	7,422.37	8,729.00	46%	54%
Compass Minerals	2,094.04	577.50	78%	22%
Eagle Materials	4,258.93	1,597.89	73%	27%
Intrepid Potash	315.15	27.06	92%	8%
Martin Marietta	17,691.33	3,539.00	83%	17%
Mosaic Company	8,723.01	5,172.10	63%	37%
Vulcan Materials	19,653.45	3,842.81	84%	16%
Selected Equity and Debt Structure			75%	25%

#### GUIDELINE COMPANY INFORMATION SUMMARY

Company	Beta	Credit Rating	Debt Rate
Cenovus Energy	1.65	Baa3	3.16%
Compass Minerals	1.00	Ba3	6.80%
Eagle Materials	1.35	Baa2	3.16%
Intrepid Potash	1.15	N/A	N/A
Martin Marietta	1.15	Baa2	3.16%
Mosaic Company	1.35	Baa3	3.16%
Vulcan Materials	1.15	Baa2	3.16%
Selected for Industry	1.26	Baa3	3.16%

\*Amount in Millions



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<b>CAPM: RULE 62 COMPLIANT</b>		<b>CAPM: IMPLIED ERP</b>	
Market Risk Premium	7.25%	Market Risk Premium	4.50%
X Industry Beta	1.26	X Industry Beta	1.26
Industry Risk Premium	9.14%	Industry Risk Premium	5.67%
Add: Risk Free Rate	1.45%	Add: Risk Free Rate	1.45%
<b>Indicated Rate</b>	<b>10.59%</b>	<b>Indicated Rate</b>	<b>7.12%</b>

<b>CAPM: SUPPLY SIDE</b>			
Market Risk Premium	6.00%		
X Industry Beta	1.26		
Industry Risk Premium	7.56%		
Add: Risk Free Rate	1.45%		
<b>Indicated Rate</b>	<b>9.01%</b>		

<b>MULTISTAGE DIVIDEND GROWTH MODEL</b>			
Company Name	<b>Indicated Rates</b>		
	Division's	Dr. Cornell's	H-Model
Cenovus Energy	3.92%	4.94%	4.45%
Compass Minerals	29.71%	35.28%	50.89%
Eagle Materials	11.59%	11.90%	11.97%
Intrepid Potash	6.06%	6.51%	5.48%
Martin Marietta	6.63%	5.26%	4.99%
Mosaic Company	12.93%	11.45%	6.20%
Vulcan Materials	8.52%	6.43%	5.55%
<b>Selected Rate</b>	<b>11.34%</b>	<b>11.68%</b>	<b>12.79%</b>



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**DIVIDEND GROWTH MODEL INPUTS**

Company Name	Stock Price	Next Year's Payout	Current Payout	Projected Growth	Long Term Growth Rate
Cenovus Energy	6.04	0.10	0.06	0	3.80%
Compass Minerals	61.72	12.69	12.32	17.00%	3.80%
Eagle Materials	101.35	6.38	5.88	7.50%	3.80%
Intrepid Potash	24.15	0.92	0.62	0	3.80%
Martin Marietta	283.97	2.64	2.25	8.50%	3.80%
Mosaic Company	23.01	0.50	0.20	21.00%	3.80%
Vulcan Materials	148.31	1.78	1.36	12.50%	3.80%

**UTAH STATE TAX COMMISSION****PROPERTY TAX DIVISION****OIL & GAS PRODUCTION -- EQUITY RATE SUMMARY**

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**RECONCILIATION**

Equity Models	Weight	Equity Rate
CAPM: RULE 62 . . . . .	100%	12.69%
CAPM: SUPPLY SIDE . . . . .	0%	10.75%
CAPM: IMPLIED ERP . . . . .	0%	8.43%
DGM: DIVISION . . . . .	0%	10.57%
DGM: CORNELL . . . . .	0%	10.19%
DGM: H-MODEL . . . . .	0%	9.11%
Reconciled Equity Rate		12.69%
Reconciled Debt Rate		7.47%
Debt/Equity Structure		55% / 45%
WACC Conclusion		9.82%





# UTAH STATE TAX COMMISSION

## PROPERTY TAX DIVISION

### OIL & GAS PRODUCTION -- COMPANY INFORMATION

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#### CALCULATION OF CAPITAL STRUCTURE

Company	Market Value Of Equity*	Market Value Of Debt*	Percent Equity	Percent Debt
ABRAXAS PETROL	19.24	204.45	9%	91%
BLACK STONE MINERALS	1,381.08	146.72	90%	10%
CALLON PETROLEUM	523.23	2,319.36	18%	82%
CONTINENTAL RESOURCES	5,953.09	5,801.33	51%	49%
DEVON ENERGY	6,039.42	5,614.00	52%	48%
HIGHPOINT RESOURCES CORP	39.43	402.20	9%	91%
PIONEER NATURAL RES.	19,990.57	4,336.00	82%	18%
QEP RESOURCES	592.72	1,755.80	25%	75%
RING ENERGY	44.87	360.99	11%	89%
ROYALE ENERGY INC	4.87	0.33	94%	6%
SM ENERGY CO	702.22	2,045.79	26%	74%
SOUTHWESTERN ENERGY	2,142.01	3,447.00	38%	62%
WHITING PETROLEUM	951.28	421.03	69%	31%
Selected Equity and Debt Structure			45%	55%

#### GUIDELINE COMPANY INFORMATION SUMMARY

Company	Beta	Credit Rating	Debt Rate
ABRAXAS PETROL	1.85	N/A	N/A
BLACK STONE MINERALS	1.15	N/A	N/A
CALLON PETROLEUM	1.95	Caa1	9.48%
CONTINENTAL RESOURCES	1.35	Ba1	5.46%
DEVON ENERGY	1.60	Ba1	5.46%
HIGHPOINT RESOURCES CORP	1.80	Ca	11.49%
PIONEER NATURAL RES.	1.30	Baa2	3.16%
QEP RESOURCES	2.10	B2	8.14%
RING ENERGY	1.50	N/A	N/A
ROYALE ENERGY INC	1.35	N/A	N/A
SM ENERGY CO	1.85	Caa1	9.48%
SOUTHWESTERN ENERGY	0.75	Ba2	6.13%
WHITING PETROLEUM	N/A	N/A	N/A
Selected for Industry	1.55	B1	7.47%

\*Amount in Millions



# UTAH STATE TAX COMMISSION

## PROPERTY TAX DIVISION

### OIL & GAS PRODUCTION -- EQUITY MODELS

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#### CAPM: RULE 62 COMPLIANT

Market Risk Premium	7.25%
X Industry Beta	1.55
Industry Risk Premium	11.24%
Add: Risk Free Rate	1.45%

**Indicated Rate 12.69%**

#### CAPM: IMPLIED ERP

Market Risk Premium	4.50%
X Industry Beta	1.55
Industry Risk Premium	6.98%
Add: Risk Free Rate	1.45%

**Indicated Rate 8.43%**

#### CAPM: SUPPLY SIDE

Market Risk Premium	6.00%
X Industry Beta	1.55
Industry Risk Premium	9.30%
Add: Risk Free Rate	1.45%

**Indicated Rate 10.75%**

#### DIVISION'S RISK PREMIUM

#### MULTISTAGE DIVIDEND GROWTH MODEL

##### Indicated Rates

Company Name	Division's	Dr. Cornell's	H-Model
ABRAXAS PETROL	N/A	N/A	N/A
BLACK STONE MINERALS	7.61%	6.88%	1.34%
CALLON PETROLEUM	N/A	N/A	N/A
CONTINENTAL RESOURCES	12.14%	12.46%	13.68%
DEVON ENERGY	N/A	N/A	N/A
HIGHPOINT RESOURCES CORP	N/A	N/A	N/A
PIONEER NATURAL RES.	8.53%	7.39%	7.10%
QEP RESOURCES	N/A	N/A	N/A
RING ENERGY	N/A	N/A	N/A
ROYALE ENERGY INC	8.16%	8.15%	7.68%
SM ENERGY CO	N/A	N/A	N/A
SOUTHWESTERN ENERGY	16.42%	16.05%	15.73%
WHITING PETROLEUM	N/A	N/A	N/A
<b>Selected Rate</b>	<b>10.57%</b>	<b>10.19%</b>	<b>9.11%</b>



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**OIL & GAS PRODUCTION -- DGM INPUTS**

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**DIVIDEND GROWTH MODEL INPUTS**

Company Name	Stock Price	Next Year's Payout	Current Payout	Projected Growth	Long Term Growth Rate
ABRAXAS PETROL	2.29	N/A	0.00	-14.00%	3.80%
BLACK STONE MINERALS	6.68	0.60	0.68	-9.00%	3.80%
CALLON PETROLEUM	13.16	N/A	0.00	25.00%	3.80%
CONTINENTAL RESOURCES	16.30	1.18	1.23	6.50%	3.80%
DEVON ENERGY	15.81	2.67	2.65	N/A	3.80%
HIGHPOINT RESOURCES CORP	9.16	N/A	0.00	0.00%	3.80%
PIONEER NATURAL RES.	113.89	2.30	2.20	10.50%	3.80%
QEP RESOURCES	2.39	N/A	0.00	0.00%	3.80%
RING ENERGY	0.66	N/A	0.00	0.00%	3.80%
ROYALE ENERGY INC	0.09	0.01	0.01	0.00%	3.80%
SM ENERGY CO	6.12	N/A	0.00	0.00%	3.80%
SOUTHWESTERN ENERGY	2.98	0.39	0.39	2.50%	3.80%
WHITING PETROLEUM	25.00	1.71	1.71	N/A	3.80%

**UTAH STATE TAX COMMISSION****PROPERTY TAX DIVISION****OIL & GAS GATHERING -- EQUITY RATE SUMMARY**

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**RECONCILIATION**

Equity Models	Weight	Equity Rate
CAPM: RULE 62 . . . . .	100%	12.18%
CAPM: SUPPLY SIDE . . . . .	0%	10.33%
CAPM: IMPLIED ERP . . . . .	0%	8.11%
DGM: DIVISION . . . . .	0%	12.45%
DGM: CORNELL . . . . .	0%	12.98%
DGM: H-MODEL . . . . .	0%	15.19%
Reconciled Equity Rate		12.18%
Reconciled Debt Rate		6.13%
Debt/Equity Structure		65% / 35%
WACC Conclusion		8.25%

**UTAH STATE TAX COMMISSION****PROPERTY TAX DIVISION****OIL & GAS GATHERING -- COMPANY INFORMATION**

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**CALCULATION OF CAPITAL STRUCTURE**

<b>Company</b>	<b>Market Value Of Equity*</b>	<b>Market Value Of Debt*</b>	<b>Percent Equity</b>	<b>Percent Debt</b>
CRESTWOOD EQUITY PARTNERS LP	1,403.95	2,507.00	36%	64%
ENERGY TRANSFER LP	16,700.66	57,100.00	23%	77%
HOLLY ENERGY PTRS.	1,497.25	1,423.39	51%	49%
ONEOK, INC	17,074.20	16,401.21	51%	49%
PLAINS ALL AMER. PIPE	5,952.41	11,359.00	34%	66%
SUMMIT MIDSTREAM PARTNERS LP	76.32	1,246.20	6%	94%
WESTERN MIDSTREAM PART.	5,719.27	8,314.93	41%	59%
WILLIAMS COS.	25,022.40	25,347.00	50%	50%
<b>Selected Equity and Debt Structure</b>			<b>35%</b>	<b>65%</b>

**GUIDELINE COMPANY INFORMATION SUMMARY**

<b>Company</b>	<b>Beta</b>	<b>Credit Rating</b>	<b>Debt Rate</b>
CRESTWOOD EQUITY PARTNERS LP	1.65	N/A	N/A
ENERGY TRANSFER LP	1.45	N/A	N/A
HOLLY ENERGY PTRS.	0.95	Ba2	6.13%
ONEOK, INC	1.60	Baa3	3.16%
PLAINS ALL AMER. PIPE	1.55	Ba1	5.46%
SUMMIT MIDSTREAM PARTNERS LP	1.75	B3	8.81%
WESTERN MIDSTREAM PART.	1.40	Ba2	6.13%
WILLIAMS COS.	1.45	N/A	N/A
<b>Selected for Industry</b>	<b>1.48</b>	<b>Ba2</b>	<b>6.13%</b>

\*Amounts in Millions



**UTAH STATE TAX COMMISSION**  
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**OIL & GAS GATHERING -- EQUITY MODELS**

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**CAPM: RULE 62 COMPLIANT**

Market Risk Premium	7.25%
X Industry Beta	1.48
Industry Risk Premium	10.73%
Add: Risk Free Rate	1.45%
<b>Indicated Rate</b>	<b>12.18%</b>

**CAPM: IMPLIED ERP**

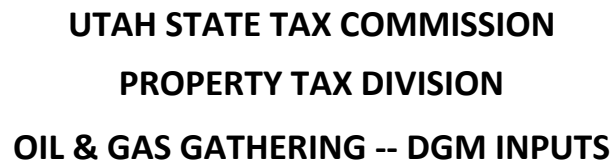
Market Risk Premium	4.50%
X Industry Beta	1.48
Industry Risk Premium	6.66%
Add: Risk Free Rate	1.45%
<b>Indicated Rate</b>	<b>8.11%</b>

**CAPM: SUPPLY SIDE**

Market Risk Premium	6.00%
X Industry Beta	1.48
Industry Risk Premium	8.88%
Add: Risk Free Rate	1.45%
<b>Indicated Rate</b>	<b>10.33%</b>

**MULTISTAGE DIVIDEND GROWTH MODEL**

Company Name	Indicated Rates		
	Division's	Dr. Cornell's	H-Model
CRESTWOOD EQUITY PARTNERS LP	3.57%	4.69%	4.66%
ENERGY TRANSFER LP	12.34%	11.75%	16.06%
HOLLY ENERGY PTRS.	12.12%	11.46%	11.77%
ONEOK, INC	16.47%	17.94%	19.96%
PLAINS ALL AMER. PIPE	12.01%	11.82%	13.72%
SUMMIT MIDSTREAM PARTNERS LP	N/A	N/A	N/A
WESTERN MIDSTREAM PART.	14.47%	15.28%	20.26%
WILLIAMS COS.	16.19%	17.95%	19.93%
<b>Selected Rate</b>	<b>12.45%</b>	<b>12.98%</b>	<b>15.19%</b>



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Company Name	Stock Price	Next Year's Payout	Current Payout	Projected Growth	Long Term Growth Rate
CRESTWOOD EQUITY PARTNERS LP	18.98	0.25	0.25	0.00%	3.80%
ENERGY TRANSFER LP	6.18	0.61	1.07	0.50%	3.80%
HOLLY ENERGY PTRS.	14.20	1.40	1.72	0.00%	3.80%
ONEOK, INC	38.38	3.90	3.74	10.00%	3.80%
PLAINS ALL AMER. PIPE	8.24	0.72	0.90	2.50%	3.80%
SUMMIT MIDSTREAM PARTNERS LP	12.49	N/A	0.00	0.00%	3.80%
WESTERN MIDSTREAM PART.	13.82	1.24	1.56	8.00%	3.80%
WILLIAMS COS.	20.05	1.82	1.74	12.00%	3.80%



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RECONCILIATION

Equity Models	Weight	Equity Rate
CAPM: RULE 62 . . . . .	100%	10.95%
CAPM: SUPPLY SIDE . . . . .	0%	9.31%
CAPM: IMPLIED ERP . . . . .	0%	7.35%
DGM: DIVISION . . . . .	0%	8.31%
DGM: CORNELL . . . . .	0%	7.49%
DGM: H-MODEL . . . . .	0%	7.15%
Reconciled Equity Rate		10.95%
Reconciled Debt Rate		5.46%
Debt/Equity Structure		25% / 75%
WACC Conclusion		9.58%



**UTAH STATE TAX COMMISSION****PROPERTY TAX DIVISION****SAND AND GRAVEL -- COMPANY INFORMATION**

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**CALCULATION OF CAPITAL STRUCTURE**

<b>Company</b>	<b>Market Value Of Equity*</b>	<b>Market Value Of Debt*</b>	<b>Percent Equity</b>	<b>Percent Debt</b>
Eagle Materials	4,258.92	1,597.89	73%	27%
Granite Construction	1,217.92	463.71	72%	28%
Martin Marietta Materials	17,691.33	3,539.00	83%	17%
Summit Materials	2,293.68	1,977.70	54%	46%
Vulcan Materials	19,653.45	3,842.81	84%	16%
<b>Selected Equity and Debt Structure</b>			<b>75%</b>	<b>25%</b>

**GUIDELINE COMPANY INFORMATION SUMMARY**

<b>Company</b>	<b>Beta</b>	<b>Credit Rating</b>	<b>Debt Rate</b>
Eagle Materials	1.35	B1	7.47%
Granite Construction	1.25	N/A	N/A
Martin Marietta Materials	1.15	BAA2	3.16%
Summit Materials	1.65	B1	7.47%
Vulcan Materials	1.15	BAA2	3.16%
<b>Selected for Industry</b>	<b>1.31</b>	<b>Ba1</b>	<b>5.46%</b>

\*Amount in Millions



**UTAH STATE TAX COMMISSION**  
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**CAPM: RULE 62 COMPLIANT**

Market Risk Premium	7.25%
X Industry Beta	1.31
Industry Risk Premium	9.50%
Add: Risk Free Rate	1.45%
<b>Indicated Rate</b>	<b>10.95%</b>

**CAPM: IMPLIED ERP**

Market Risk Premium	4.50%
X Industry Beta	1.31
Industry Risk Premium	5.90%
Add: Risk Free Rate	1.45%
<b>Indicated Rate</b>	<b>7.35%</b>

**CAPM: SUPPLY SIDE**

Market Risk Premium	6.00%
X Industry Beta	1.31
Industry Risk Premium	7.86%
Add: Risk Free Rate	1.45%
<b>Indicated Rate</b>	<b>9.31%</b>

**MULTISTAGE DIVIDEND GROWTH MODEL**

Company Name	Indicated Rates		
	Division's	Dr. Cornell's	H-Model
Eagle Materials	11.77%	12.13%	12.23%
Granite Construction	6.38%	6.30%	5.91%
Martin Marietta Materials	8.65%	6.06%	5.39%
Summit Materials	N/A	N/A	N/A
Vulcan Materials	6.44%	5.48%	5.08%
<b>Selected Rate</b>	<b>8.31%</b>	<b>7.49%</b>	<b>7.15%</b>



**UTAH STATE TAX COMMISSION**  
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**SAND AND GRAVEL -- DGM INPUTS**

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**DIVIDEND GROWTH MODEL INPUTS**

Company Name	Stock Price	Next Year's Payout	Current Payout	Projected Growth	Long Term Growth Rate
Eagle Materials	101.35	6.38	5.88	7.95%	3.80%
Granite Construction	26.71	0.64	0.52	4.25%	3.80%
Martin Marietta Materials	283.97	2.64	2.25	13.50%	3.80%
Summit Materials	20.08	N/A	N/A	2.15%	3.80%
Vulcan Materials	148.31	1.78	1.36	7.35%	3.80%

**UTAH STATE TAX COMMISSION****PROPERTY TAX DIVISION****URANIUM MINING -- EQUITY RATE SUMMARY**

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**RECONCILIATION**

Equity Models	Weight	Equity Rate
CAPM: RULE 62 . . . . .	100%	7.61%
CAPM: SUPPLY SIDE . . . . .	0%	6.55%
CAPM: IMPLIED ERP . . . . .	0%	5.28%
DGM: DIVISION . . . . .	0%	13.57%
DGM: CORNELL . . . . .	0%	11.06%
DGM: H-MODEL . . . . .	0%	8.70%
Reconciled Equity Rate		7.61%
Reconciled Debt Rate		3.16%
Debt/Equity Structure		10% / 90%
WACC Conclusion		7.17%

**UTAH STATE TAX COMMISSION****PROPERTY TAX DIVISION****URANIUM MINING -- COMPANY INFORMATION**

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**CALCULATION OF CAPITAL STRUCTURE**

Company	Market Value Of Equity*	Market Value Of Debt*	Percent Equity	Percent Debt
Cameco Corp (CCJ)	6,748.89	921.67	88%	12%
Selected Equity and Debt Structure			90%	10%

**GUIDELINE COMPANY INFORMATION SUMMARY**

Company	Beta	Credit Rating	Debt Rate
Cameco Corp (CCJ)	0.85	Baa3	3.16%
Selected for Industry		0.85	Baa3
			3.16%

\*Amounts in Millions





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## DIVIDEND GROWTH MODEL INPUTS

Company Name	Stock Price	Next Year's Payout	Current Payout	Projected Growth	Long Term Growth Rate
Cameco Corp (CCJ)	17.05	0.27	0.27	24.0%	3.80%